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On the Role of Inequalities in Legal Systems: A Tocquevilian View

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Abstract

The present paper proposes to interpret the differences in legal systems between common-law and civil-law nations as arising from the importance given to adjudication in comparison with statute laws. It focuses on the relative costs of legal change by adjudication (case law development) when compared with legislation (statutory law development). The main argument is that the public concern with equality is a major determinant of the relative cost of adjudication in a legal system. We develop a model of the legal process that illustrates Tocqueville's fundamental intuition with regard to the uniformity of legal rules, and as a consequence, the relative importance of adjudication and legislation.

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1 Introduction

In every modern nations law is modified by two means. On the one hand, new laws are voted by different legislative bodies; on the other hand, existing laws are changed by the decisions of judges (the so-called adjudication). This paper proposes an explanation of the different combinations between legislation and adjudication that are observed in most advanced countries.

The codification/judicial-decision dichotomy relating to the development of legal principles has given rise traditionally to important distinctions between the systems: the role of judicial decisions in the making of law, and the manner of legal reasoning. In practice, civil-law countries have comprehensive codes, often developed from a single drafting event (e.g. the Napoleonic Code in 1804). The codes cover an abundance of legal topics, sometimes treating separately private law, criminal law, and commercial law. While common-law countries have sometimes statutes in those areas, they have been derived more from an *ad hoc* process over many years. In other words, in civil-law systems, the role and influence of judicial precedent has been traditionally negligible whereas in common-law countries, precedent has been elevated to a position of supreme prominence via *stare decisis*. Civil-law judges look to code provisions to resolve a case, while common-law judges instinctively reach for casebooks to find the solution to an issue in a case.

However, the distinctions between the two systems have blurred. For a long time, statute law occupied an important place in common-law countries, whereas adjudication played an increasing role in civil-law ones. For instance, there are a great number of codes in the United States. Their main goal is to list written rules, put them in order and make them easy to find. American codes bring together the rules of law in force in a specific field. More generally, in the common-law codes are considered as techniques of “consolidation” or “restatement”. The assumption is that the legislator meant to reformulate rules drawn from the adjudication, i.e. they are the statutory embodiments of rules developed through the judicial decision-making process. On the other hand, one can observe today that important fields in civil-law countries have a jurisprudential nature. The judge’s role is theoretically a simple and narrow one, limited by strict notions of legislative supremacy. Civil-law judges are the “operators” of the system designed by legal scientists and built by legislators. Since there is only one correct solution to a legal problem, according to legal science and the developed doctrine, judicial discretion becomes largely unnecessary. However, as commentators both within and outside the civil-law world have observed, theory and practice are often in tension, and this tension is reflected in the changing roles of the actors in the legal system. Legislative practice often falls short of its objective to provide a clear, systematic legislative prescription for every legal problem that may arise. As a result, judges frequently must interpret vague code sections, and there is a growing body of judge-made law that provides a gloss on the codes. For instance, in countries with older code systems, such as France or Germany, the effects of judicial interpretation are particularly obvious and far reaching. Thus, the tort law which is covered only in the most general way by the Code Civil, is also the product of modern judicial decisions.

The economic analysis of legal systems is an important field for research. The first arguments developed by Posner (2003), Rubin (1977) or Priest (1977) have tried to demonstrate the efficiency of the common law. However, these authors were not interested in the comparison between common law and civil law traditions.

Such a comparison is the object of the new comparative economics whose main objective is to explain differences in countries economic and financial performances considering their legal origins. As noted by La Porta, Lopez de Silanes, Shleifer and Vishny (1998): "if we find that legal rules differ substantially across legal families and that financing and ownership patterns do as well, we have a strong case that legal families, as expressed in the legal rules, actually cause outcomes". In other words, legal origins imply differences in terms of private property rights protection. Common law has evolved to protect property rights whereas civil law was constructed mainly to solidify State power. In this way, these authors show that the common law system generates historically greater judicial independence and more developed financial markets, but they do not really consider the difference in legal structures and, specifically, the respective role of adjudication and legislation[1].

Another analysis has been proposed by Beck, Demircug-Kunt and Levine (2003). They consider that legal systems differ in their abilities to adapt to changing economic and financial conditions. More precisely, legal systems that embrace adjudication and do not rely excessively on changes in statutory law will tend to evolve more efficiently to changing conditions than legal systems that reject adjudication or require strict adherence to statutes. This is the adaptability channel. In a way, it is a new version of the posnerian hypothesis of the efficiency of the common law if one consider that adaptability implies a reduction of transaction costs. The problem with these explanations is that they cannot completely capture the complex interaction between legal and socio-economic conditions. This is certainly the reason why new perspectives are developed that focus on the importance of the political process to establish causal relations between Law and

[1] However, Glaeser and Shleifer (2002) offer an explanation of why legal origins were different. They assert that a key point in the design of a legal system is to know if law enforcers can be protected from coercion by litigants through either violence or bribes. They argue that when this is not possible, it is best to have law enforcers beholden to the state (as in thirteen century France). If this is possible, using decentralized juries is the best solution (as in thirteen century England). For a critical assessment of this idea, see Roe (2007), Klerman and Mahoney (2007).

Economics (Roe (2007), Rajan and Zingales (2003) and Pagano and Volpin (2006)). Indeed, political decisions determine the degree of investor or labor protections and legal rules can result from a political agreement between entrepreneurs and workers.

However, the reasons for the differences between legal systems remain “not entirely clear yet nor, in general, are the causal mechanisms that link either legal system to economic performance” (Ponzetto and Fernandez, 2008). There is a need for a theoretical approach of the legal systems that insists on the respective roles of judges and legislators. This is also the opinion expressed by Hadfield (2008) : “the more fundamental difficulty in the existing framework,..., has to do with the stylized theoretical relationship that is assumed to exist between how legal regimes, particularly judges, behave and the institutions that identify the regime as a “civil code” or a “common law” system”.

The present paper proposes to interpret the differences between common-law and civil-law nations as arising from the importance given to adjudication in comparison with statute laws. It focuses on the relative costs of legal change by adjudication (case law development) when compared with legislation (statutory law development). Our main argument is that public concern with equality is a major determinant of the relative cost of adjudication in a legal system. Though this theory is only part of the story, we consider that the public feeling about inequality is a major explanation of the relative importance of adjudication. More precisely, the more people are sensitive to equality, the less they are likely to tolerate differences in legal outputs produced by adjudication and the more will they rely on written laws.

The main author who has tried to establish a link between inequalities and the characteristics of legal systems is certainly Alexis de Tocqueville (1835)[2]. For Tocqueville, one of the driving forces that shape institutions of democratic nations is the continuous increase in equality among citizens[3]. As a consequence:[4]

> *The very next notion to that of a sole and central power, which presents itself to the minds of men in the ages of equality, is the notion of uniformity of legislation. As every man sees that he differs but little from those about him, he cannot understand why a rule which is applicable to one man should not be equally applicable to all others. Hence the slightest privileges are repugnant to his reason; the faintest dissimilarities*

[2] An english translation of Tocqueville’s works is available on line at *http://faculty.law.lsu.edu/ccorcos/resumetocqueind.htm*

[3] This viewpoint is explicitly states in Chap 1, Book II, Democracy in America 2, fourth paragraph.

[4] Chapter II, book IV, second volume of Democracy in America.

> *in the political institutions of the same people offend him, and uniformity of legislation appears to him to be the first condition of good government... Notwithstanding the immense variety of conditions in the Middle Ages, a certain number of persons existed at that period in precisely similar circumstances; but this did not prevent the laws then in force from assigning to each of them distinct duties and different rights. On the contrary, at the present time all the powers of government are exerted to impose the same customs and the same laws on populations which have as yet but few points of resemblance...*

The trend toward more uniform rules is seen at work in America by Tocqueville[5]. However, uniformity of legal rules is not achieved in the same ways across nations. There are nations which favor more equality than others, and accordingly more uniform rules than others. Moreover, the demand of equality is self perpetuating[6]. Interestingly, Tocqueville asserts that it is France which leads the process of concentration of powers and of uniformization of rules[7]. In particular, at the time Tocqueville writes Democracy in America, laws are more uniform in Europe than in England[8]. For him, this is a striking fact since, elsewhere, he argues that legal systems in Europe have a common origin[9]. The adoption of the Napoleonic Code in France at the beginning of the XIXth century is interpreted as a consequence of the French revolution and of its "egalitarian" aspirations.

The present paper develops a model of the legal process that illustrates Tocqueville's fundamental intuition with regard to the uniformity of legal rules, and as a consequence, the relative importance of adjudication and legislation. We will present this model following several steps. First, in the next section, we shall study a simple model of adjudication assuming that codification (if there is any) is exogenous. Second, we will present a (median voter) model of legislation without adjudication. Third, we shall merge these two models and obtain a more realistic view of the legal system where adjudication and written laws are the outcome of the interactions between judges and politicians. This a crude but useful way to capture the democratic process which underlies the legal process. With this third model, we will study on what conditions regarding aversion to inequality, adjudication is more developed than written laws. The model yields many other insights and is

[5] Chapter II, book four, second volume of Democracy in America, third paragraph.

[6] Tocqueville indeed argues that as more equality is achieved, the remaining inequalities are considered as more unbearable. On this, see Chapter III, Book four, the second volume of Democracy in America, third paragraph.

[7] See Chapter II, Book four, second volume of Democracy in America, fourth paragraph.

[8] Tocqueville, quoting Blackstone, writes a long note to the chapter IV of the third Book of Democracy in America on the diversity of the English legal system at the end of the Ancient Regime.

[9] See Chapter IV, Book 1 of The Ancient regime and the Revolution (Tocqueville (1856)).

useful for analyzing such issues as complementarity between codified law and jurisprudence. To keep the exposition free of too many technical details, all the proofs are gathered in an appendix.

2 Two simple models of law development

2.1 A model of adjudication

We consider a given legal system where there are J legal regions. In each legal region, legal decisions are made by a single judge. The existing states of legislation (written laws) and adjudication are not necessarily adapted to the legal needs of the region. We assume that one can measure by a real number x_i the changes in the legal system (both in written laws and adjudication) that a region i would favor. By assumption, when no changes are needed, the value of the real number is zero (statu quo).

Importantly, following Tocqueville, we assume that people across the legal system are adverse to too different regional legal decisions. This means that though people would like to have laws more suited to their needs, they are aware that this could result in an unequal legal system.

Let $\overline{\mathbf{x}}$ be the vector of the adjudication decisions $\overline{x}_j$ taken by regional judges.

The preferences of the representative agent in region j are described by the next loss function:

$$L(\overline{\mathbf{x}}, x_j) = U(\overline{x}_j, x_j) + \frac{\alpha}{2J}\sum_{i=1}^{J}(\overline{x}_i - \frac{1}{J}\sum_{k=1}^{J}\overline{x}_k)^2 \tag{1}$$

In this expression:

- $U(.; x_j)$ is a strictly convex, smooth function which realizes its minimum at x_j. This function describes the cost for the representative citizen in region j of the adjudication decision $\overline{x}_j$.
- The last term reflects the aversion to inequality which results from diverse adjudications decisions. We assume that α is positive, *i.e.* the representative citizen's preference are decreasing with respect to the variance of the judges' decisions.

We suppose that the preferences $L^J(\overline{\mathbf{x}}, x_j)$ of the judges reflect in part those of the representative citizen of a region and can be described by the next loss function[10].

[10] This hypothesis is quite natural when judges are elected by citizens. But, it seems also reasonable to admit that it is also true when judges are nominated. The hypothesis means simply that the judicial system has to take into account the preferences of citizens.

$$L^J(\overline{\mathbf{x}}, x_j) = U(\overline{x}_j, x_j) + \frac{\theta}{2}\overline{x}_j^2 + \frac{\alpha}{2J}\sum_{k=1}^{J}\left(\overline{x}_k - \frac{1}{J}\sum_{i=1}^{J}\overline{x}_j\right)^2 \tag{2}$$

The term $(\theta/2)\overline{x}_j^2$ describes the cost of a judge in region j of changing the law with respect to the statu quo.

Example. A specification of the preferences that satisfies our assumptions is:

$$L^J(\overline{\mathbf{x}}, x_j) = \frac{1}{2}(\overline{x}_j - x_j)^2 + \frac{\theta}{2}\overline{x}_j^2 + \frac{\alpha}{2J}\sum_{i=1}^{J}(\overline{x}_i - \frac{1}{J}\sum_{k=1}^{J}\overline{x}_k)^2 \tag{3}$$

In practice, one can admit that the aversion of citizens to inequality is historically given. Following Tocqueville, we consider that this aversion is greater in Continental Europe comparing to the US [11].

We shall assume that each regional judges chooses to maximize his preferences (i.e. to minimize his loss) through the choice of $\overline{x}_j$.

An important feature of adjudication is that the decisions of judges are not coordinated. This is relevant as a first approximation. However, it would be inexact to assert that there are no coordination at all. For instance, the existence of several legal levels insure a minimum of coordination (though this may take time to be the implemented). Also, the existence of legal precedent is a (more or less imperative) constraint that must be taken into account by judges.

Nevertheless, we shall view adjudication as the outcome of a non-cooperative game (the adjudication game) played by judges who have to adapt legal rules to regional needs without increasing the variance of legal changes[12].

Formally, this will lead us to study the Nash equilibrium of the game:

Definition 1. *An equilibrium change in law is defined as a Nash equilibrium of the adjudication game, namely a vector of decisions taken by regional judges $\overline{\mathbf{x}}^*$ which satisfy:*

$$\overline{x}_j^* = \arg\min_{\overline{x}_j} U(\overline{x}_j, x_j) + \frac{\theta}{2}\overline{x}_j^2 + \frac{\alpha}{2J}\sum_{k=1}^{J}\left(\overline{x}_k^* - \frac{1}{J}\sum_{i=1}^{J}\overline{x}^*{}_j\right)^2 \tag{4}$$

[11] For instance, many authors have corroborated empirically a difference in aversions to economic inequality across nations (Williamson and Lindert (1980), Brenner, Kaelble and Thomas (1991) Piketty (2001)).

[12] This increase in variance generates what Harnay and Marciano (2004) call an adoption externality. These authors use an original and very different model of adoption externalities than ours to study judicial conformity with a non-cooperative game.

Proposition 1. *There exists a unique Nash equilibrium for the adjudication game.*

We shall now study how the Nash equilibrium is affected by a change in α (the parameter that describes the aversion to the variance of judges' decisions). We shall also be interested in having a measure of the aggregate change in adjudication and to do this it is convenient to study the changes in the mean adjudication ($\overline{x}$).

Proposition 2. *We have:*

$$\frac{\partial \overline{x}}{\partial \alpha} = \frac{-1}{J} \frac{\sum_{i=1}^{J} \frac{(\overline{x}_i - \overline{x})}{U''(\overline{x}_i, x_i) + \theta + \frac{\alpha}{J}}}{J - \frac{\alpha}{J} \sum_{i=1}^{J} \frac{1}{U''(\overline{x}_i, x_i) + \theta + \frac{\alpha}{J}}} \tag{5}$$

$$\frac{\partial \overline{x}_j}{\partial \alpha} = \frac{1}{U''(\overline{x}_j, x_j) + \theta + \frac{\alpha}{J}} \big(\frac{\alpha}{J} \frac{\partial \overline{x}}{\partial \alpha} - \frac{1}{J} (\overline{x}_j - \overline{x}) \big) \tag{6}$$

Interestingly, when $\sum_i \frac{(\overline{x}_i - \overline{x})}{U''(\overline{x}_i, x_i) + \frac{\alpha}{J}}$ is nil, the change in the average decision on adjudication is nil, and the change in adjudication in region j reduces to: $\frac{\partial \overline{x}_j}{\partial \alpha} = -\frac{1}{J}(\overline{x}_j - \overline{x})$. This particular result arises in the example introduced above.

To understand equations (5) and (6), let us study the optimality condition satisfied by the adjudication decision in region j:

$$U'(\overline{x}_j, x_j) + \theta \overline{x}_j + \frac{\alpha}{J}(\overline{x}_j - \overline{x}) = 0 \tag{7}$$

This equation shows that the sum of three marginal losses must be nil in a Nash equilibrium.

The first one ($U'(\overline{x}_j, x_j)$) corresponds to the difference between the adjudication decision of the judge in region j and the legal needs of the region (x_j). The second is the cost for the judge of deviating from the status quo ($\theta \overline{x}_j$). The last one is the cost of deviating from the mean adjudication decision.

When aversion to inequality arises (i.e. α increases), in a first approximation the change in the decision of a judge depends strongly on the sign of $\overline{x}_j - \overline{x}$. If the adjudication decision of judge j is above (resp. below) the mean adjudication, an increase in α will lead to a decrease (resp. an increase) in adjudication. This is because the marginal loss of deviating from the mean decision is higher.

The net effect of the changes in all judges decisions $\overline{x}_j$ on the mean decision $\overline{x}$ depends on the intensity of the reaction of each judge (i.e. the importance of $U''(\overline{x}_i, x_i) + \theta + \frac{\alpha}{J}$), the number of regions where the adjudication decision is above the mean (as well as the importance of the difference between this decision and the mean).

Importantly, one must notice that the change in adjudication in region j depends also on how changes the mean. If the mean decreases, everything held constant, the optimal decision must increase.

As a result, the final effects of a change in α both on the mean and the regional adjudication decisions are likely to be complex. In the example proposed above, the change in the mean is nil (the sum of individual changes in adjudication cancels) and the change at a regional level depends only on the sign of $\overline{x}_j - \overline{x}$.

2.2 A simplistic model of legislation

Within the framework presented in the previous subsection, we shall now present a very simple model of legislation that relies on the median voter principle.

Let us assume that there is no adjudication and that all the laws are codified. By its very nature a change in legislation affects all citizens simultaneously. As a consequence, the variance of the regional changes in laws is simply zero. So, denoting by x the importance of the change in legislation, the preferences of a representative agent in region j reduce to:

$$L(\overline{\mathbf{x}}, x_j) = U(x, x_j) \tag{8}$$

Recall that under our assumptions, for all j, x_j is the unique solution of the problem:

$$\min_x U(x, x_j). \tag{9}$$

Example (Continued). Using the specification of the preferences introduced in the preceding subsection, one has:

$$L(\overline{\mathbf{x}}, x_j) = \frac{1}{2}(\overline{x}_j - x_j)^2 \tag{10}$$

We now suppose that there is an odd number of regions. We denote by x_m the change in laws favored by the representative agent of the median region. Under the assumption of strict convexity of $U(., x_j)$, we may apply the median voter principle and the level of change will be the outcome of a majority voting. This outcome is of course always the changes favored by the median region.

Admittedly, our modeling of the legal process is rather crude. However, its simplicity will be instrumental in obtaining a tractable model of a more realistic legal system where legislation and adjudication are determined simultaneously. We now turn to the presentation of this model.

3 The Tocqueville effect: Inequality aversion and the law

The aim of this section if first to present a model of the joint determination of adjudication and legislation. Second, we will use this model to analyze the consequence of a change in the aversion to inequality on the relative importance given to adjudication and legislation for adapting the law.

3.1 A model of the joint determination of adjudication and legislation

We now assume that the change in legal conditions in region j may be the result of changes in legislation as well as in adjudication. More precisely, when the change in adjudication is $\overline{x}_j$ and the change in legislation is x, we assume that the change in the law prevailing in region j is equal to : $\overline{x}_j + x$.

Hence, we assume that the changes in adjudication or legislation are perfect substitutes. This assumption is an important one. However the major reason for its use is that it leads to simple computations[13].

With these assumptions, the preferences of the representative agent (i.e. the representative voter) in region j write now:

$$L(\overline{\mathbf{x}}, x, x_j) = U(\overline{x}_j + x, x_j) + \frac{\alpha}{2J} \sum_{i=1}^{J} (\overline{x}_i - \frac{1}{J} \sum_{k=1}^{J} \overline{x}_k)^2 \tag{11}$$

Again, the preferences of regional judges will be almost identical to that of the representative agent. Indeed, we shall continue to assume that the judges will try to choose legal decisions that do no differ too much from the existing law, and in particular from the existing legislation (see *e.g.* Hadfield (2008)). Formally, we posit that the preferences of a judge in region j write:

$$L^J(\overline{\mathbf{x}}, x_j) = U(\overline{x}_j + x, x_j) + \frac{\theta}{2}(\overline{x}_j)^2 + \frac{\alpha}{2J} \sum_{k=1}^{J} \left(\overline{x}_k - \frac{1}{J} \sum_{i=1}^{J} \overline{x}_j\right) \tag{12}$$

We are now in position to define an equilibrium for the joint determination of adjudication and legislation.

[13] In particular the computation of the variance of the regional legal conditions is drastically simplified.

Definition 2. *An equilibrium for the changes in law is a pair of changes in adjudication and legislation* $(\overline{\mathbf{x}}^*, x^*)$ *which satisfy:*

1) for each judge j[14]*,*

$$\overline{x}_j^* = \arg\min_{\overline{x}_j} U(\overline{x}_j + x^*, x_j) + \frac{\theta}{2}(\overline{x}_j)^2 + \frac{\alpha}{2J}\sum_{i=1}^{J}(\overline{x}_i^* - \frac{1}{J}\sum_{k=1}^{J}\overline{x}_k^*)^2 \tag{13}$$

2) for the median region m*,*

$$\overline{x}_j^* = \arg\min_{x} U(\overline{x}_m^* + x, x_m) + \frac{\alpha}{2J}\sum_{i=1}^{J}(\overline{x}_i^* - \frac{1}{J}\sum_{k=1}^{J}\overline{x}_k^*)^2 \tag{14}$$

Notice that the median voter principle may be correctly applied.

Interestingly, despite the fact that legislation and adjudication are decided in a non-cooperative way, the changes in the law $\overline{x}_m$ wanted by the representative agent of the median region is always realized. This result strongly depends on the assumption that the change in law is a linear combination of the changes in legislation and in adjudication.

Proposition 3. *There exists a unique equilibrium for the changes in law. At this equilibrium, we have:*

$$\overline{x}_m = \frac{\frac{\alpha}{J}\overline{x}}{\theta + \frac{\alpha}{J}} \tag{15}$$

$$x = x_m - \overline{x}_m = x_m - \frac{\frac{\alpha}{J}\overline{x}}{\theta + \frac{\alpha}{J}} \tag{16}$$

We are now in position to study how the relative importance of adjudication and written laws depends on the aversion to inequality.

3.2 Adjudication, Legislation and aversion to inequality

In this subsection we propose to illustrate the Tocquevilian perspective on the organization of legal systems. The analysis will focus on the role of the aversion to inequality (α). The resulting changes in the aversion to inequality on adjudication and legislation are given by the next Proposition:

[14] Of course the term $\overline{x}_j$ in the sum is not equal to $\overline{x}_j^*$.

Proposition 4. *One has:*

$$\frac{\partial \overline{x}}{\partial \alpha} = \frac{-1}{J\Lambda}\left((\frac{1}{\theta + \frac{\alpha}{J}})\Big(\sum_{j=1}^{J} \frac{U''(\overline{x}_j + x, x_j)}{U''(\overline{x}_j + x, x_j) + \theta + \frac{\alpha}{J}}\Big)(\overline{x}_m - \overline{x}) - \sum_{j=1}^{J} \frac{\overline{x}_j - \overline{x}}{U''(\overline{x}_j + x, x_j) + \theta + \frac{\alpha}{J}}\right) \quad (17)$$

$$\frac{\partial x}{\partial \alpha} = \frac{1}{J(\theta + \frac{\alpha}{J})\Lambda}\left(\left(\Lambda + \frac{\frac{\alpha}{J}}{(\theta + \frac{\alpha}{J})}\Big(\sum_{j=1}^{J} \frac{U''(\overline{x}_j + x, x_j)}{U''(\overline{x}_j + x, x_j) + \theta + \frac{\alpha}{J}}\Big)\right)(\overline{x}_m - \overline{x}) - \frac{\alpha}{J}\sum_{j=1}^{J} \frac{\overline{x}_j - \overline{x}}{U''(\overline{x}_j + x, x_j) + \theta + \frac{\alpha}{J}}\right) \quad (18)$$

where:

$$\Lambda = J - (\frac{\frac{\alpha}{J}}{\theta + \frac{\alpha}{J}})\sum_{j=1}^{J}(\frac{U''(\overline{x}_j + x, x_j)}{U''(\overline{x}_j + x, x_j) + \theta + \frac{\alpha}{J}}) - \frac{\alpha}{J}\sum_{j=1}^{J} \frac{1}{U''(\overline{x}_j + x, x_j) + \theta + \frac{\alpha}{J}} > 0. \quad (19)$$

Admittedly these expressions are cumbersome. The consequences of a change in α are likely to be intricate. Hence, the Tocqueville effect is unlikely to show up easily.

To gain some understanding of the expressions above, let us concentrate on the effect of a change in α on $\overline{x}$.

First let us explain the factor of $\overline{x}_m - \overline{x}$ in (17). A change in α is a direct effect on adjudication in the median region $\overline{x}_m$ (see equations (15) and (16)), so that:

$$\triangle \overline{x}_m = \frac{\triangle \alpha}{J} \frac{\overline{x}_m - \overline{x}}{\theta + \frac{\alpha}{J}} \quad (20)$$

This leads to a direct change in the legislation x equal to

$$\triangle x = -\triangle \overline{x}_m \quad (21)$$

Indeed, in the median region, the ideal change in law x_j is always realized.

As a consequence, there is a change in every $\overline{x}_j$:

$$\frac{\triangle \overline{x}_j}{\triangle \alpha} = \frac{\triangle \overline{x}_j}{\triangle x}\frac{\triangle x}{\triangle \alpha} \tag{22}$$

$$= \frac{U''(\overline{x}_j + x, x_j)}{U''(\overline{x}_j + x, x_j) + \theta + \frac{\alpha}{J}}\frac{\triangle x}{\triangle \alpha} \tag{23}$$

$$= -\frac{\triangle \alpha}{J}\frac{U''(\overline{x}_j + x, x_j)}{U''(\overline{x}_j + x, x_j) + \theta + \frac{\alpha}{J}}\frac{(\overline{x}_m - \overline{x})}{\theta + \frac{\alpha}{J}} \tag{24}$$

Aggregating these changes yields:

$$\triangle \overline{x} = -\frac{\triangle \alpha}{J}\frac{(\overline{x}_m - \overline{x})}{\theta + \frac{\alpha}{J}}\Big(\sum_{j=1}^{J}\frac{U''(\overline{x}_j + x, x_j)}{U''(\overline{x}_j + x, x_j) + \theta + \frac{\alpha}{J}}\Big) \tag{25}$$

Hence, we get the coefficient of $(\overline{x}_m - \overline{x})$ in the numerator of (17). Thus, the coefficient of $(\overline{x}_m - \overline{x})$ captures the sum of the effects of a change in the regional adjudications$\overline{x}_j$ that results from a change in legislation x (which itself is caused by a direct change in aggregate adjudication $\overline{x}_m$). The other coefficient may be understood as was done in the previous section.

In the next Proposition, we give sufficient conditions for the Tocqueville effect to be realized.

Proposition 5 (**Tocqueville Effect**). *Assume that* $\sum_{j=1}^{J}\frac{(\overline{x}_j - \overline{x})}{U''(\overline{x}_j + x, x_j) + \theta + \frac{\alpha}{J}} = 0$. *Then the Tocqueville effect shows up iff* $\overline{x}_m > \overline{x}$. *Formally:*

$$\frac{\partial \overline{x}}{\partial \alpha} < (>)\ 0 \iff \overline{x}_m > \overline{x}\ (\overline{x}_m < \overline{x}) \tag{26}$$

$$\frac{\partial x}{\partial \alpha} > (<)\ 0 \iff \overline{x}_m > \overline{x}\ (\overline{x}_m < \overline{x}). \tag{27}$$

Otherwise, if $\sum_{j=1}^{J}\frac{(\overline{x}_j - \overline{x})}{U''(\overline{x}_j + x, x_j) + \theta + \frac{\alpha}{J}} < (>)\ 0$, $\overline{x}_m > (<)\ \overline{x}$ *is a sufficient condition for the Tocqueville effect.*

It is noteworthy that the assumptions above in the Proposition are satisfied by our example.

The gist of the Proposition is as follows. Suppose without loss of generality that $\overline{x}_m > \overline{x}$ (that is, the median adjudication is higher than the mean adjudication). Then, an increase in α leads to a decrease in the change in adjudication in region m. To achieve its objective the median voter has to increase the change in legislation. In turn, this change in legislation is conducive to an aggregate decrease in adjudication (this is because, the higher x the lower $\overline{x}_j$: adjudication and legislation are substitutes). Under our assumptions the feedback effect of the changes in $\overline{x}$ on x_j that follows from the *direct* impact of α on $\overline{x}_j$ either does not appear or is magnified.

Hence, the last Proposition shows that an increase in the aversion to inequality may lead to an increase in legislation and a decrease in the average adjudication. This generates the Tocqueville effect.

The assumptions used in the Proposition are not the only ones under which the Tocqueville effect is true. Nevertheless, it is interesting to interpret the relevance of the condition $\overline{x}_m > \overline{x}$. From the previous inequality, one has:

$$\overline{x}_m + x = x_m > \overline{x} + x$$

where the first equality stems from the fact that the ideal change in law of the median region is always achieved.

The last inequality means that there is a majority of regions for which the ideal changes in law (x_j) are higher than the mean change in law ($\overline{x} + x$).

This state of affair seems to be that of modern societies where a majority of agents favor a rather permissive evolution of laws (this evolution being however always criticized by a fraction of the society). Since this long-run evolution exists both in Europe and in the United-States a difference of aversion to inequality may well be a key factor, again in the long-run, for the evolution of common law and civil law systems.

4 Concluding remarks

This paper provides a new explanation of the "boundaries" between adjudication and legislation. It relies on the role of inequality aversion and its importance across nations. Historically, common law countries tend to give a crucial importance to adjudication whereas civil law nations rely more on code or written laws. A decisive observation has been proposed by Tocqueville that aversion to inequality is more important in nations who use legal systems relying essentially on written laws (and conversely, aversion to inequality is less important in common law nations). We consider this observation to explain how legal structures could be linked to differences in aversion to inequality. The main argument is that written laws, by nature, provide a more unified legal system than common law and is more suitable for realizing equal legal outcomes.

As a result, one could say that the legal systems are constraint-efficient. Again, this conclusion applies both to common law nations and to civil laws nations. The variety of legal systems cannot necessarily reflect differences in terms of efficiency. For instance, the civil law system is different because it must adapt to different preferences than those of common law nations. We have stressed the importance of inequality aversion but other factors could be at play (see e.g. Genaioli and Shleifer (2006)). It appears really important to consider this factor even if Law and Economics scholars, following Kaplow and Shavell (1987) consider that the distribution of wealth cannot be the primary goal of legal systems. However, this doesn't mean that common law and civil law systems have nothing to do with inequalities. It is even more amazing to observe that most of economic analysis of the evolution of these systems have ignored this question.

To conclude, we discuss possible extensions which go beyond the scope of the current exercise. The present paper uses a simple set-up of judicial system. The hierarchy between judges, for instance between judges of first degree and appellate courts or the supreme court, are not taking into account. This could be justified by considering that precedents are binding, so there is a great stability in the legal system. However, an alternative could be to allow for different judicial organizations. Such asymmetries may also provide interesting implications and empirical predictions as to which countries tend to adjust their institutional structures according to economic inequalities.

It may also be worth noting that there is a Law and Economics literature that addresses the question of legal procedures. It is interesting to consider how the choice between inquisitorial and accusatory procedures can be influenced by considerations of inequalities (Deffains and Demougin (2008)). As different procedures are enforced by courts in common law and civil law countries, this confirms the importance of inequalities to explain legal systems.

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Appendix

Proof of Proposition 1.

First step. Consider any region j. Each judge chooses its adjudication in an optimal way. This leads to the following optimality conditions:

$$U'(\overline{x}_j, x_j) + \theta\overline{x}_j + \frac{\alpha}{J}(\overline{x}_j - \overline{x}) = 0 \tag{28}$$

Under our assumptions, $\overline{x}$ being given, this equation has a unique solution $\overline{x}_j(\overline{x})$ which defines a function $\overline{x}_j(\overline{x})$ that is increasing and smooth.

Second step. Let us now introduce the mapping:

$$\phi : \mathbb{R} \to \mathbb{R} \tag{29}$$

$$\overline{x} \mapsto \frac{1}{J}\sum_{j=1}^{J} \overline{x}_j(\overline{x}) \tag{30}$$

It is easy to see that if $\overline{x}$ is a fixed point of $\phi(.)$, then the vector $\overline{\mathbf{x}} \equiv \big(\overline{x}_1(\overline{x}), \cdots, \overline{x}_1(\overline{x})\big)$ is an equilibrium for the adjudication game. Conversely, to any equilibrium of this game, the mean $\sum_{j=1}^{J} \overline{x}_j/J$ is a fixed point of $\phi(.)$.

Third step. Using the implicit function Theorem in equation (28), one can easily compute the slope of $\phi(.)$:

$$0 < \phi'(\overline{x}) = \frac{1}{J}\sum_{j=1}^{J} \frac{\frac{\alpha}{J}}{U''(\overline{x}_j, x_i) + \theta + \frac{\alpha}{J}} < \frac{1}{J}\sum_{j=1}^{J} \frac{\frac{\alpha}{J}}{\theta + \frac{\alpha}{J}} < 1. \tag{31}$$

It follows that $\phi(.)$ is a contraction and therefore it admits a unique fixed point. $\square$

Proof of Proposition 2

At a Nash equilibrium, the following necessary and sufficient optimality conditions are satisfied:

$$U'(\overline{x}_j, x_j) + \theta\overline{x}_j + \frac{\alpha}{J}(\overline{x}_j - \overline{x}) = 0 \tag{32}$$

Totally differentiating these equations and rearranging, one gets:

$$\frac{\partial \overline{x}_j}{\partial \alpha} = \frac{1}{U''(\overline{x}_j, x_j) + \theta + \frac{\alpha}{J}} \big(\frac{\alpha}{J} \frac{\partial \overline{x}}{\partial \alpha} - \frac{1}{J} (\overline{x}_j - \overline{x}) \big) \tag{33}$$

Summing across regions, one gets:

$$J \frac{\partial \overline{x}}{\partial \alpha} = \frac{\alpha}{J} \Big(\sum_{j=1}^{J} \frac{1}{U''(\overline{x}_j, x_j) + \theta + \frac{\alpha}{J}} \Big) \frac{\partial \overline{x}}{\partial \overline{x}} - \frac{1}{J} \sum_{i=j}^{J} \frac{(\overline{x}_i - \overline{x})}{U''(\overline{x}_j, x_j) + \theta + \frac{\alpha}{J}} \tag{34}$$

Rearranging again, one obtains the above formulae. □

Proof of Proposition 3

Proof. The argument is similar to that of Proposition 1

Step 1. Let us define:

$$\overline{x}_m = \frac{\frac{\alpha}{J} \overline{x}}{\theta + \frac{\alpha}{J}} \tag{35}$$

$$x = x_m - \overline{x}_m = x_m - \frac{\frac{\alpha}{J} \overline{x}}{\theta + \frac{\alpha}{J}} \tag{36}$$

The reasons of these definitions are as follows. In any equilibrium, the change in the law in the median region is always equal to that preferred by the median voter. This implies that the first-order optimality condition for adjudication in this region will reduce to equation (35). Then, the condition $x + \overline{x}_m = x_m$ implies equation (36).

Second step. Now consider $\overline{x}$ as being given. For any judge in region $j \neq m$, the optimal adjudication satisfies:

$$U'(\overline{x}_j + x_m - \frac{\frac{\alpha}{J} \overline{x}}{\theta + \frac{\alpha}{J}}, x_j) + \theta \overline{x}_j + \frac{\alpha}{J} (\overline{x}_j - \overline{x}) = 0 \tag{37}$$

One can sees that the optimal decision of judge j, $\overline{x}_j(\overline{x})$, is an increasing smooth function of $\overline{x}$.

Third step. Let us define the function $\phi(.)$:

$$\phi : \mathbb{R} \to \mathbb{R} \tag{38}$$

$$\overline{x} \mapsto \frac{1}{J}\Big(\sum_{j\neq m}^{J} \overline{x}_j(\overline{x}) + \frac{\frac{\alpha}{J}\overline{x}}{\theta + \frac{\alpha}{J}}\Big) \tag{39}$$

Using the implicit function theorem in (37) one has:

$$0 < \phi'(\overline{x}) = \frac{1}{J}\Big(\sum_{j=1, j\neq m} \frac{\frac{\frac{\alpha}{J}}{\frac{\alpha}{J}+\theta} U''\left(\overline{x}_j(\overline{x}) + x, x_j\right) + \frac{\alpha}{J}}{U''(\overline{x}_j(\overline{x}) + x, x_j) + \theta + \frac{\alpha}{J}} + \frac{\frac{\alpha}{J}}{\frac{\alpha}{J} + \theta}\Big) \tag{40}$$

$$= \frac{\frac{\alpha}{J}}{\frac{\alpha}{J} + \theta} < 1 \tag{41}$$

Hence, $\phi(.)$ is a contraction and admits a unique fixed point.

Fourth step. By definition, one has $\overline{x}_m(\overline{x}) + x = x_m$. By assumption, this implies that:

$$U'(\overline{x}_m(\overline{x}) + x, x_m) = 0 \tag{42}$$

This, with the definition of $\overline{x}_m(\overline{x})$, implies that the decisions of the judges and the median voter are optimal.

Fifth. It is clear that any equilibrium change in law defines a mean value $\overline{x}$ that is a fixed point of $\phi(.)$. Hence, the uniqueness property follows. $\square$

Proof of Proposition 4

At the equilibrium, the following necessary and sufficient optimality conditions are satisfied:

$$U'(\overline{x}_j + x, x_j) + \theta\overline{x}_j + \frac{\alpha}{J}(\overline{x}_j - \overline{x}) = 0, \ \forall j \tag{43}$$

$$U'(\overline{x}_m + x, x_m) = 0 \tag{44}$$

From the last equation, one has $x_m = \overline{x}_m + x$, so that:

$$\frac{\partial \overline{x}_m}{\partial \alpha} + \frac{\partial x}{\partial \alpha} = 0 \tag{45}$$

Totally differentiating (43) and the above equation, on gets after few computations:

$$\frac{\partial \overline{x}_j}{\partial \alpha} = \frac{1}{U''(\overline{x}_j, x_j) + \theta + \frac{\alpha}{J}} \Big(U''(\overline{x}_j + x, x_j) \frac{\partial \overline{x}_m}{\partial \alpha} + \frac{\alpha}{J} \frac{\partial \overline{x}}{\partial \alpha} - \frac{1}{J}(\overline{x}_j - \overline{x}) \Big) \tag{46}$$

Summing across regions one gets:

$$J \frac{\partial \overline{x}}{\partial \alpha} = \Big(\sum_{j=1}^{J} \frac{U''(\overline{x}_j + x, x_j)}{U''(\overline{x}_j + x, x_j) + \theta + \frac{\alpha}{J}} \Big) \frac{\partial \overline{x}_m}{\partial \alpha} + \Big(\frac{\alpha}{J} \sum_{j=1}^{J} \frac{1}{U''(\overline{x}_j + x, x_j) + \theta + \frac{\alpha}{J}} \Big) \frac{\partial \overline{x}}{\partial \alpha}$$
$$+ \Big(\frac{1}{J} \sum_{j=1}^{J} \frac{(\overline{x}_j - \overline{x})}{U''(\overline{x}_j + x, x_j) + \theta + \frac{\alpha}{J}} \Big) \tag{47}$$

Now, using equation (43) for $j = m$, as well as (44), one has:

$$\frac{\partial \overline{x}_m}{\partial \alpha} = \frac{\frac{-1}{J}(\overline{x}_m - \overline{x}) + \frac{\alpha}{J} \frac{\partial \overline{x}}{\partial \alpha}}{\theta + \frac{\alpha}{J}} \tag{48}$$

Using this in (47), one gets (17). Now, using (17) in (48) and (45), one obtains (18).

Let us now study the sign of Λ. One has:

$$J > \sum_{j=1}^{J} \frac{U''(\overline{x}_j + x, x_j) + \frac{\alpha}{J}}{U''(\overline{x}_j + x, x_j) + \theta + \frac{\alpha}{J}} \tag{49}$$

$$> \frac{\frac{\alpha}{J}}{\theta + \frac{\alpha}{J}} \Big(\sum_{j=1}^{J} \frac{U''(\overline{x}_j + x, x_j)}{U''(\overline{x}_j + x, x_j) + \theta + \frac{\alpha}{J}} \Big) + \frac{\alpha}{J} \sum_{j=1}^{J} \frac{1}{U''(\overline{x}_j + x, x_j) + \theta + \frac{\alpha}{J}} \tag{50}$$

The result follows from the definition of Λ. □

Proof of Proposition 5

Proof. The Proposition follows directly from Proposition 4 and the fact that the functions $U(., x_j)$ are strictly convex and smooth. □